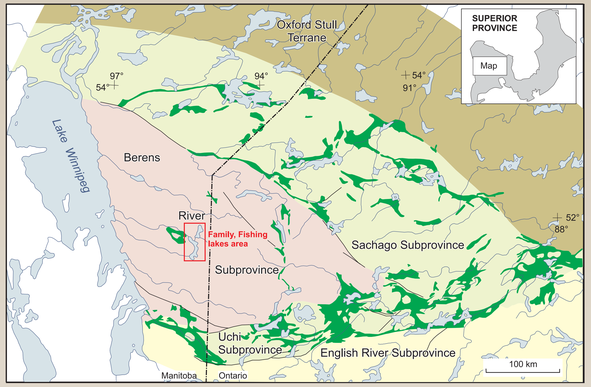
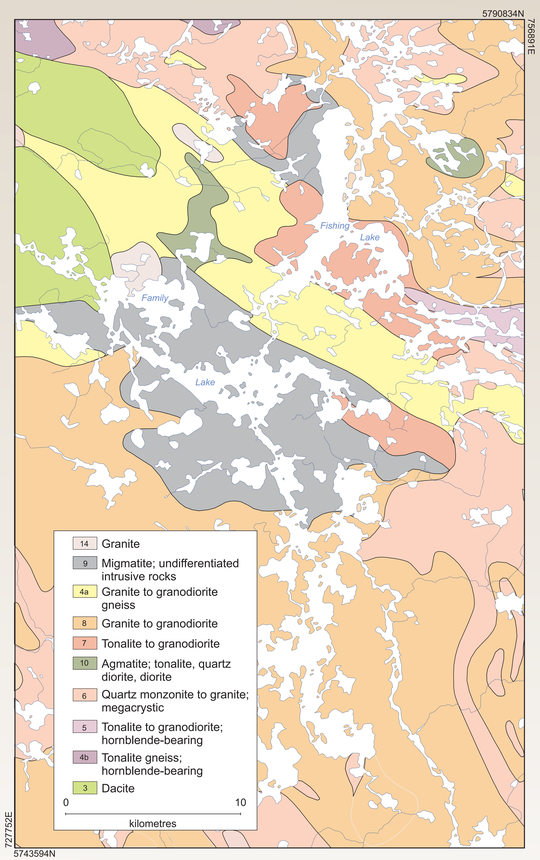


North Caribou Superterrane in Manitoba and Northwestern Ontario is comprised of the granite greenstone Uchi Subprovince and Sachigo Subprovince (pale green with dark green greenstone belts) and cored by the Berens River Subprovince (pink). (After Corfu and Stone,1998)



Re-interpreted geology of the Family - Fishing lakes study area. All geologic contacts are from Ermanovics 1969 and 1970.

Summary

Fieldwork conducted during the summer of 2010 was designed to take advantage of a well-exposed corridor in the Family-Fishing lakes area, including the Horseshoe Lake greenstone belt. The new data set updates the plutonic complex to current nomenclature standards, providing a consistent legend of rock types in the Berens River Domain for use in the 1:250 000 scale digital map of Manitoba. In addition, modern terminology ensures that comparisons can be made to similar adjacent rocks in Ontario.

Preliminary outcrop observations combined with geochemical analyses indicate the mafic to potassic-felsic rocks were emplaced in a variety of tectonic environments, involving at least five igneous suites. All rocks are metaluminous and rich in alkali elements; gabbro plots into the alkaline field. Preliminary data indicate a continental environment for the entire set of mafic to potassic-felsic suites and suggest evolution in a continental arc through its continental collision and post-collisional magmatism. Isotopic dating of one of the potassic rocks and a dacite or hornblende tonalite is needed to provide a time frame for the evolution of this igneous suite.

The reconnaissance field mapping program was designed to take advantage of a well exposed corridor of exposure on the shorelines of Family and Fishing lakes. The goal was to remap the lithologies described by Ermanovics (1969, 1970) that are exposed on these lakes and to collect a suite of samples for future geochemistry, geochronology and isotopic studies. The new data set serves several purposes by providing: 1) a review of the old nomenclature, some of which was based on the pre-1970 'Clan" classification of plutonic rocks, 2) a review and comparison of the legends from previous geological maps (Ermanovics 1969, 1970) in the transect area, and 3) a comparison to similar adjacent rocks in Ontario and their tectonic setting.

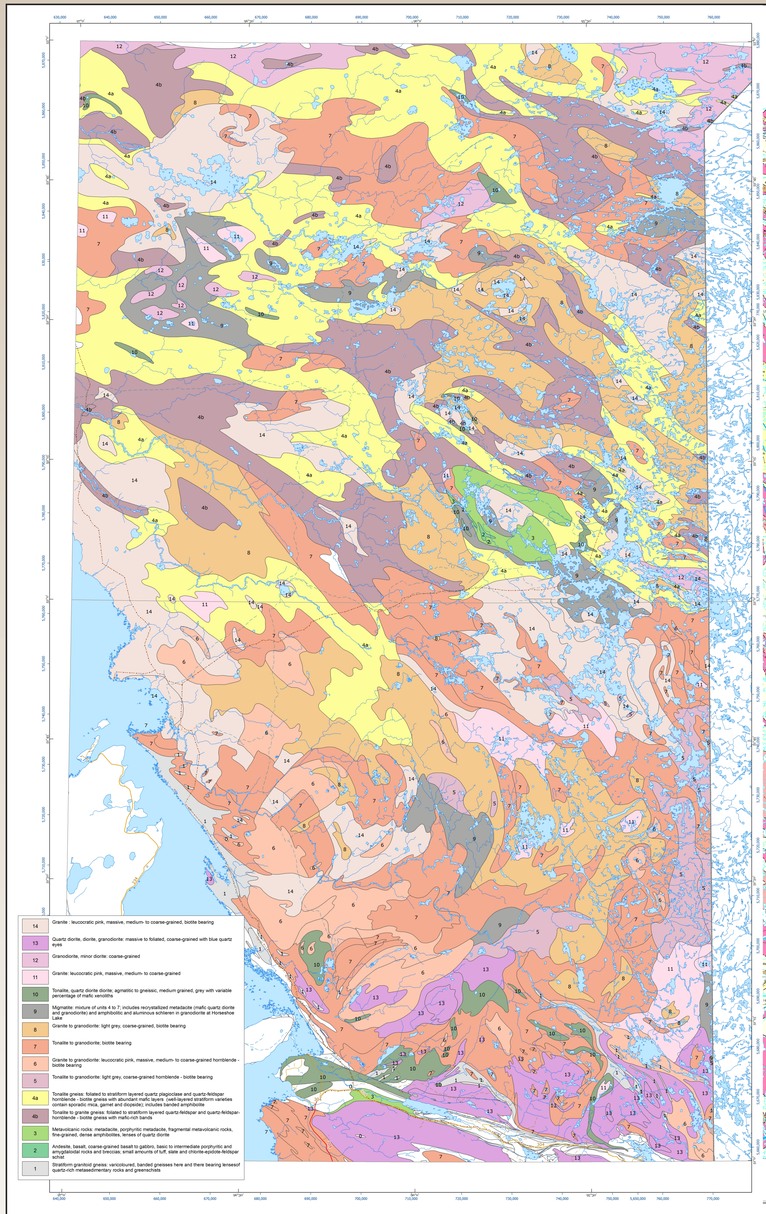
The primary outcome of this study is the rationalization of the various existing geological maps to a common legend. Secondly, the extensive mapping by Ontario Geological Survey by Stone (1998) is used to help reinterpret the tectonic history of the region.

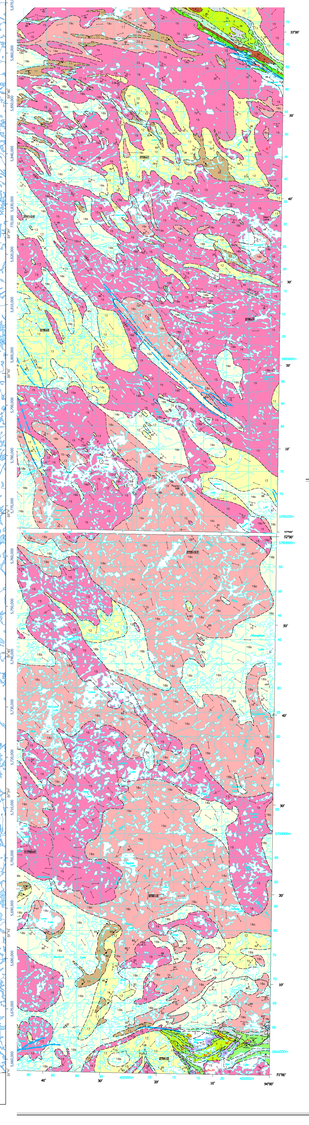
This project's object to investigate the lithologies described by Ermanovics (1969, 1970) in the Family - Fishing lakes area was successful in replacing the old nomenclature with modern terminology, and reviewing and comparing the legends in existing geological maps (Ermanovics 1969, 1970) in the transect area.

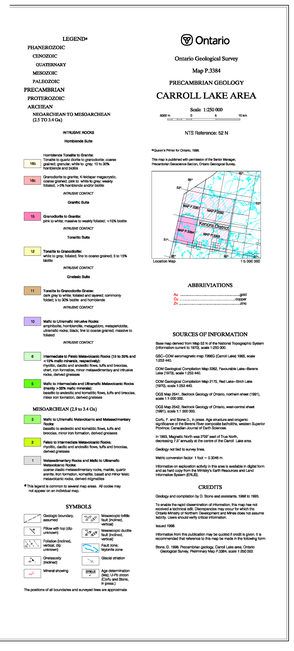
However, comparison of Manitoba maps with the adjacent maps in Ontario remains problematic. Stone 1998 subdivided the most abundant rock types in the region - the 2.75 to 2.70 Ma granitic rocks - into a hornblende±biotite bearing suite a the biotite-bearing 'granitic' suite. These suites can be recognized in the present study area; however, as Ermanovics (1969, 1970) did not document nor separate the major granitic units into a hornblende±biotite suite and a biotite suite in this fashion, rationalizing the legends and lithologies along the Manitoba-Ontario border will not be a simple task.

The systematic terminology for igneous intrusive rocks (Streckeisen,1976) has been applied to all the previously mapped lithologies in the study area. The process of applying the new terminology to the region (parts of NTS sheets 52L, 52M, 53D&E, 62P, and 63A and H) is in progress. Although there will be a less than 100% correlation the result will provide a significant improvement and will rationalize the terminology with the legend and descriptions of the seamless digital 1:250 000 geological map of Manitoba.

See poster T12 for details of the mapping done in the Family Fishing lakes area.







References

Corfu, F. and Stone, D. 1998: Age structure and orogenic significance of the Berens River composite batholiths, Western Superior Province; Canadian Journal of Earth Sciences, v.43, p.1085-1117.

Ermanovics, I.F. 1969: Precambrian Geology of the Hecla - Carroll Lake Map - Area, Manitoba - Ontario, Geological Survey of Canada, Paper 69-42, 33 p.

Ermanovics, I.F. 1970: Geology of the Berens River-Dear Lake map area, Manitoba and Ontario and preliminary analysis of tectonic variations in the area, Geological Survey of Canada, Paper 70-29, 24 p.

Stone, D. 1998: Precambrian Geology of the Berens River